

## AN ACT

To amend chapter 170, RSMo, by adding thereto one new section relating to standard science instruction.

---

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF MISSOURI, AS FOLLOWS:

Section A. Chapter 170, RSMo, is amended by adding thereto one new section, to be known as section 170.018, to read as follows:

170.018. 1. This section shall be known as, and may be cited as, the "Missouri Standard Science Act".

2. As used in this section, the following terms mean:

(1) "Analogous naturalistic process", a verifiable process which is either a present-day naturally occurring process similar to a past naturalistic process or the human-directed duplication of a process similar to a past naturalistic process. The verifiable process uses similar natural materials, mechanisms and conditions as past naturalistic process and produces an equivalent end result;

(2) "Biological evolution", a theory of the origin of life and its ascent by naturalistic means. The first simple life was developed from basic elements and simple molecules through the mechanisms of random combinations, naturally occurring molecular structures, other naturalistic means, and millions of years. From the first simple life, all subsequent species developed

through the mechanisms of random variation, mutation, natural selections, adaptation, segregation, other naturalistic means, and millions of years. The theory is illustrated by the evolutionary phylogenic tree. Theory philosophically demands only naturalistic causes and denies the operation of any intelligence, supernatural event, God or theistic figure in the initial or subsequent development of life;

(3) "Biological intelligent design", a hypothesis that the complex form and function observed in biological structures are the result of intelligence and, by inference, that the origin of biological life and the diversity of all original species on earth are the result of intelligence. Since the inception of each original species, genetic material has been lost, inherited, exchanged, mutated, and recombined to result in limited variation. Naturalistic mechanisms do not provide a means for making life from simple molecules or making sufficient new genetic material to cause ascent from single celled organisms to large life forms. The hypothesis does not address the time or sequence of life's appearance on earth, time or formation of the fossil record, and time or method of species extinction. The hypothesis does not require the identity of intelligence responsible for earth's biology but requires any proposed identity of that intelligence to be verifiable by present-day observation or experimentation. Concepts inherent within the

hypothesis include:

(a) The origin of life on earth is inferred to be the result of intelligence directed design and construction. There are no plausible mechanisms or present-day experiments to prove the naturalistic origin of the first independent living organism;

(b) All original species on earth are inferred to be the result of intelligence directed design and construction. There are no significant mechanisms or present-day experiments to prove the naturalistic development of earth's species from small single celled organisms;

(c) Complex forms in proteins, enzymes, DNA, and other biological structures demonstrated by their constituent molecules in regard to size, shape, quantity, orientation, sequence, chirality, and integration imply intelligent design was necessary for the first life on earth. Intelligence is capable of designing complex form;

(d) Complex functions demonstrated by growth, reproduction, repair, food metabolization, waste disposal, stimuli response, and other functions in independent living organisms imply intelligent design was necessary for the first life on earth. Intelligence is capable of designing complex function;

(e) Within the history of human experience, all exhibits of recurring discrete symbols from a set of symbols arranged in a specific sequence which store information and can be read by

human intelligence, is itself the result of intelligence. DNA contains stored information for the assembling of proteins and enzymes which can be read by humans and is the result of intelligence. The recurring discrete symbols sequenced within DNA which store information are the molecules adenine, guanine, cytosine, and thymine;

(f) Intelligence-directed design and construction of all original species at inception without an accompanying genetic burden is inferred rather than random mutational genetic change as a constructive mechanism. Random mutational genetic change results in an increasing genetic burden and species degradation rather than species ascent;

(g) Intelligence-directed action is necessary to exceed the limits of natural species change, which is a combination of autogenous species change and environmental effected species change. Multigeneration breeding experiments illustrate the limits of natural species change. Intelligence-directed action is necessary to exceed the limits of natural species change and was required to develop large amounts of new genetic information contained within species evident today;

(h) The irreducible complexity of specific biological systems implies a completed design and construction at inception rather than step-by-step development, as indicated by the structures observed for sight, hearing, smell, balance, blood

coagulation, digestion, and hormone control;

(i) The lack of significant transitional forms between diverse species existing today and in the fossil record implies all original species were completed at inception rather than by a step-by-step development from other species. A lack of transitional forms is illustrated by the appearance of large complex life forms in the Cambrian fossil record without any significant previous fossils;

(j) Common designs and features evident in different species imply the intelligent reuse of proven designs analogous to the reuse of proven designs by human designers;

(k) The lack of significant present-day observable changes in species due to random variation, mutation, natural selection, adaptation, segregation, or other naturalistic mechanisms implies a completed design rather than a step-by-step development;

(4) "Destiny", the events and processes that define the future of the universe, galaxies, stars, our solar system, earth, plant life, animal life, and the human race and which may be founded upon faith-based philosophical beliefs;

(5) "Empirical data", information obtained from observation or experimentation about the physical universe. The components of observed information include the identity of the observed object, date of observation, location of observation, means of observation, observational tools, observing personnel, and

recorded observations. The components of experimental information include the methodology of experimentation, date of experiment, location of experiment, experimental apparatus, experimenting personnel, and recorded observations. Empirical data is not speculative, theoretical, hypothetical, inferred, implied, extrapolated, or conjecture;

(6) "Equal treatment", the approximate equal teaching of each viewpoint for a specific course of instruction in course textbooks and teacher-directed activities as follows:

(a) Course textbooks contain approximately an equal number of pages of relevant material teaching each viewpoint. Textbook materials include text, pictures, illustrations, graphs, questions, discussion items, student exercises, teacher support material, and other material supplied with the textbook, with freedom allowed the textbook publishers to arrange, substitute, or size material to provide an approximately equal teaching of each viewpoint for a specific textbook;

(b) Teacher-directed activities teach each viewpoint approximately equal. Teacher directed activities include lecture time, visual aids, reading assignments, homework, experiments, student discussion time, video or audio materials, guest speakers, test material, and similar activities directed by the teacher, with freedom to lengthen, shorten, or substitute activities to provide an approximately equal teaching of each

viewpoint for a specific course of instruction;

(c) In the absence of course textbooks which provide equal treatment, written interim material may provide alternate viewpoints, with interim curriculum material developed pursuant to subsection 5 of this section allowed to be used for a period not to exceed the compliance date specified in subsection 4 of this section;

(7) "Extrapolated radiometric data", estimated data based on the radiometric decay of an unstable isotope as measured in half-life and which can be used to estimate the date or age of an object containing the isotope. Estimated data may be accurate, partially accurate, or inaccurate due to measurement variation, object heterogeneity, contamination, infiltration, leaching, isotope uptake variation, and other uncontrolled factors. Examples of estimated extrapolated radiometric data are dates based on Carbon-14, rubidium-strontium, potassium-argon, argon-argon, and uranium-lead dating methods;

(8) "Hypothesis", a scientific theory reflecting a minority of scientific opinion which may lack acceptance because it is a new idea, contains faulty logic, lacks supporting data, has significant amounts of conflicting data, or is philosophically unpopular. One person may develop and propose a hypothesis;

(9) "Origin", the events and processes previous to written history that define the beginning, development, and record of the

universe, galaxies, stars, our solar system, earth, earth geology, earth geography, fossils, species extinction, plant life, animal life, and the human race, and which may be founded upon faith-based philosophical beliefs;

(10) "Scientific theory", an inferred explanation of incompletely understood phenomena about the physical universe based on limited knowledge, whose components are data, logic, and philosophy or faith, and whose ultimate proof is dependent on verified supporting or conflicting empirical data. The inferred explanation may be proven, mostly proven, partially proven, unproven, or false, and may be based on data which is supportive, inconsistent, conflicting, incomplete, or inaccurate. The inferred explanation may be described as a scientific theoretical model;

(11) "Scientific law", a statement describing specific phenomena about the physical universe which has been verified by observation or experimentation with no verifiable exceptions of empirical data. The statement may be described by formula;

(12) "Standard science", knowledge disclosed in a truthful and objective manner about the physical universe without any philosophical demands concerning origin or destiny. Knowledge is based upon verified empirical data obtained through observation and experimentation and serves as the factual basis for formulae, events, processes, principles, and laws and may be a component of



theory, hypothesis, conjecture, and extrapolation. Knowledge acquired on a continual basis by humanity increases the amount of verified empirical data and serves as the basis for the constant reevaluation of theory, hypothesis, conjecture, and extrapolation to determine their correctness based on supporting or conflicting empirical data.

3. All science taught in Missouri public elementary and secondary schools, including material concerning physics, chemistry, biology, health, physiology, genetics, astronomy, cosmology, geology, paleontology, anthropology, ecology, climatology, or other science topics shall be standard science. Science shall teach that empirical data, formulae, events, processes, principles, and laws can be determined to have a factual basis and that theory, hypothesis, conjecture, and extrapolation are tentative and subject to correction based on supporting or conflicting empirical data. All standard science course materials and instruction shall meet the following criteria:

(1) If empirical data is taught, only such empirical data which has been verified or is currently capable of being verified by observation or experimentation shall be taught. Data with the appearance of empirical data which has never been verified and is currently incapable of being verified shall be identified as nonverifiable when taught orally or in writing;

(2) If extrapolated radiometric data is taught, such data shall be identified as extrapolated data and explained as estimated data when taught orally or in writing. For each textbook or course of instruction, if the date or age of an object is given based upon extrapolated radiometric data, a one-time explanation of the extrapolation method shall be taught when the date or age is introduced. The one-time explanation shall include the identity of the isotope used, the isotope decay process, the end product of decay, isotope decay half-life, specific materials which can be dated by the method, and the approximate time range of the dating method. The one-time explanation shall include assumptions of the extrapolation method, potential for error, and relevant examples of invalid, inaccurate, or suspect results;

(3) If scientific law is taught, written textbooks statements identified as scientific law shall have no known exceptions of verified empirical data;

(4) If scientific theory is taught, the theory shall be identified as theory when taught orally or in writing. Empirical data may be presented to support taught theory where considered instructive. As used in this subsection, the term "theory" shall mean theory or hypothesis;

(a) If a scientific theory concerning origin or destiny is taught without the teaching of opposing scientific theory, the

taught theory may be criticized by the teaching of conflicting empirical data where considered instructive;

(b) If scientific theory concerning biological origin is taught, biological evolution and biological intelligent design shall be taught and given equal treatment. Other scientific theory or theories of biological origin may be taught and given equal treatment. If biological intelligent design is taught and if an identity for intelligence responsible for earth's biology is taught, the identity shall be verifiable by present-day observation or experimentation and teachers shall not question, survey, or otherwise influence student belief in a nonverifiable identity within a science course;

(5) If an event previous to written history is taught, the event shall be supported by physical evidence. Physical evidence and data concerning the event may be taught where considered instructive. Conjecture concerning an event previous to written history as to the occurrence of the event, cause of the event, date of the event, length of time for the event to occur, subsequent effects of the event, or other speculative details shall be taught as theory or hypothesis as specified in subdivision (4) of this subsection;

(6) If a naturalistic process previous to written history is taught, the naturalistic process shall be duplicated by an analogous naturalistic process. Details of the analogous

naturalistic process may be taught where considered instructive. Conjecture concerning a naturalistic process previous to written history as to the occurrence of the process, cause of the process, date of the process, length of time for the process to occur, process conditions, process mechanisms, process materials, or other speculative details shall be taught as theory or hypothesis as specified in subdivision (4) of this subsection;

(7) If a scientific theory or hypothesis proved to be false is taught for historical, illustrative, or other reasons, the theory or hypothesis shall be identified as false when taught orally or in writing.

4. New textbooks purchased after January 1, 2006, for use in Missouri public elementary and secondary schools shall meet the requirements of this section. All textbooks used after January 1, 2016, in Missouri public elementary and secondary schools shall meet the requirements of this section.

5. The state commissioner of education shall appoint a temporary committee of no fewer than five individuals who are knowledgeable of science and supportive of intelligent design to serve without compensation. The committee shall develop supplemental curriculum materials for interim use by schools for the teaching of standard science and biological intelligent design by October 1, 2005. Interim curriculum material shall be accessible for copying on the department of elementary and

secondary education Internet web site without cost or restriction.

6. The state commissioner of education shall prescribe a list of suitable textbooks which teach standard science no later than January 1, 2006. The prescribed list shall be accessible on the department of elementary and secondary education Internet web site. The textbook publisher shall certify to the commissioner of education that each textbook edition complies with this section.

7. The willful neglect of any elementary or secondary school superintendent, principal, or teacher to observe and carry out the requirements of this section shall be cause for termination of his or her contract.

8. The state commissioner of education shall ensure that any assessment or competency testing of elementary or secondary school pupils for academic performance used and controlled by the state conforms with this section concerning science material.

9. Each public school classroom in this state from grades eight through twelve in which science is taught exclusively shall post a copy of this section in a conspicuous manner.